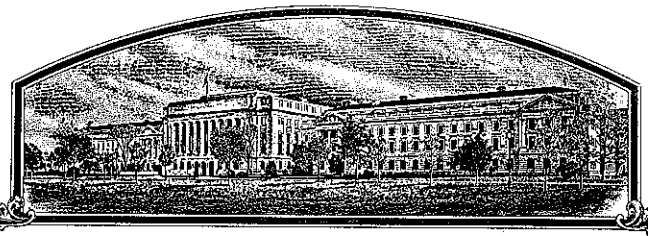

No. 9600050

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Agriculture Canada

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING YBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'9004'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of Washington, D.C. this thirtieth day of April in the year of our Lord one thousand nine hundred and ninety-eight.*

Attest:

Thomas A. Salt
Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*

~~Pioneer Hi-Bred International, Inc.~~
Agriculture Canada MMS 11/13/97

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

3. VARIETY NAME
9004

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
700 Capital Square
400 Locust St.
Des Moines, IA 50309

5. TELEPHONE *(include area code)*
515/270-3582

6. FAX *(include area code)*
515/253-2288

FOR OFFICIAL USE ONLY

PVPO NUMBER 9600050

FILING DATE: NOV. 22, 1995

FEE RECEIVED
FILING AND EXAMINATION FEE: $ 2450.00
DATE: Nov. 22 1995
CERTIFICATION FEE: $ 300
DATE: 4/07/98

7. GENUS AND SPECIES NAME
Glycine Max

8. FAMILY NAME *(Botanical)*
Leguminosae

9. CROP KIND NAME *(Common name)*
Soybean

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.) (Common name)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Iowa

12. DATE OF INCORPORATION
1926

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

John Grace
7300 NW 62nd Ave.
PO Box 1004
Johnston, IA 50131-1004

Mike Roth (copy)
700 Capital Square
400 Locust St.
Des Moines, IA 50309

14. TELEPHONE *(include area code)*
515/270-3582

15. FAX *(include area code)*
515/253-2288

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. ☒ Exhibit A. Origin and Breeding History of the Variety
b. ☒ Exhibit B. Statement of Distinctness
c. ☒ Exhibit C. Objective Description of the Variety
d. ☒ Exhibit D. Additional Description of the Variety
e. ☒ Exhibit E. Statement of the Basis of the Applicant's Ownership
f. ☒ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)*
g. ☒ Filing and Examination Fee ($2,450), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)?*
☐ YES *(If "yes," answer items 18 and 19 below)* ☒ NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES *(If "yes," give names of countries and dates)* ☒ NO

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*
D. John Grace, III

NAME *(Please print or type)*
D. Jonn Grace III

CAPACITY OR TITLE
Soybean Research Coordinator

DATE
11/16/95

SIGNATURE OF APPLICANT *(Owner(s))*

NAME *(Please print or type)*

CAPACITY OR TITLE

DATE

SD-470 (04-95) *(Previous editions are to be destroyed)*

(See reverse for instructions and information collection burden statement)

Pioneer Hi-Bred Int'l, Inc.
PVP Application 9004 Soybean
May 2, 1995

EXHIBIT A

ORIGIN AND BREEDING HISTORY

Breeding History of 9004 Soybean

1981 (Spring) A cross was made between 'Maple Ridge' and 'Lakota' in Ontario, Canada

1981 (Summer) F1 grown out in Ontario , Canada

1981-82 (Winter) F2 grown out in New Zealand

1982 (Summer) F3 bulk grown in Ontario, Canada

1983 (Summer) F4 bulk yield tested in Ontario, Canada, individual plants selected

1984 (Summer) F4;F5 Individual selections grown in Ontario, Canada. Selection which became '9004' was advanced to yield test program

1985 (Summer) Yield tested in Ontario, Canada

1986 (Summer) Yield tested in Ontario, Canada

1987 (Summer) Yield tested in Ontario, Canada

1988 (Summer) Yield tested across 23 locations in Canada

1989 (Summer) Yield tested across 23 locations in Canada

1991 (Summer) Yield tested in Minnesota and North Dakota

1992 (Summer) Yield tested in Minnesota and North Dakota (tests: RFV0E000)

1993 (Summer) Grown in Yield trials in Minnesota and North Dakota (tests: RFV0E000, RFA0E000)

1994 (Summer) Grown in Yield trials in Minnesota and North Dakota (tests: RFA0E000, RFVXB004)

1995 Based on early maturity, high yield potential, and above average iron-deficiency chlorosis tolerance, the line was released as '9004'

Pioneer Hi-Bred Int'l, Inc.
PVP Application 9004 Soybean
May 2, 1995

EXHIBIT A

ORIGIN AND BREEDING HISTORY

Breeding History of 9004 Soybean (continued)

'9004' has undergone nine years of extensive yield testing and purification. It has been observed by the breeder to be uniform and stable for all plant traits from generation to generation, with no evidence of variants.

Four acres of 9004 (breeder's seed) were grown in 1993. Thirty-five acres of 9004 (foundation seed equivalent) were grown in 1994.

Pioneer Hi-Bred Int'l, Inc.
PVP Application 9004 Soybean
May 2, 1995

EXHIBIT B: NOVELTY STATEMENT CONCERNING 9004 SOYBEAN

To our knowledge, variety 9004 is most similar to 'KG40', 'KG41', 'KG60', 'Maple Glen', 'Maple Ridge', 'PS42', and 'Scorpio'. Each of these varieties has purple flowers, tawny pubescence, tan (yellow) hila color and falls within either the Group 000, 00, or 0 maturity groups. However each of these varieties exhibits an isozyme profile which differs form 9004 (Table 1).

Table 1. Isozyme profiles of 9004, KG40, KG41, KG60, Maple Glen, Maple Ridge, PS42, and Scorpio.

	Isozyme											
Variety	ACO2	ACO3	ACO4	ACP	DIA	ENP	IDH1	IDH2	MDH	MPI	PGM1	PHI1
9004	2	1	1	B	B	B	1	2	B	A	2	1
KG40	2	1	3	B	A,B	B	1	1	A	A,B	1	2
KG41	2	1	3	A	A	B	2	1	A	A	2	2
KG60	2	1	3	A,B	B	B	1	1	A	A,B	1	1,2
Maple Glen	1	1	3	A	A	A	2	1	A	A	2	2
Maple Ridge	2	1	3	A	A	B	1	1	A,B	A	2	2
PS42	2	1	3	A,B	B	A,B	1	1,2	A,B	A,B	1,2	1,2
Scorpio	2	1	3	A	A	B	2	1	B	A	2	2

Key:

Aconitase: ACO2, ACO3, ACO4
Acid Phosphatase: ACP
Diaphorase: DIA
Endopeptidase: ENP
Isocitrate Dehydrogenase: IDH1, IDH2
Malate Dehydrogenase: MDH
Mannose 6-Phosphate Isomerase: MPI
Phosphoglucomutase: PGM
Phosphoglucose Isomerase: PHI
□

Pioneer Hi-Bred Int'l, Inc.
PVP Application 9004 Soybean
May 2, 1995

EXHIBIT B: NOVELTY STATEMENT CONCERNING 9004 SOYBEAN

(continued)

Other differences between '9004' and the comparison varieties are indicated below.

KG40: 9004 matures 13 days earlier than KG40 (Table 2).

KG41: 9004 matures 20 days earlier than KG41 (Table 3).

KG60: 9004 matures 16 days earlier than KG60 (Table 4).

Maple Glen: 9004 matures 10 days earlier than Maple Glen (Table 5).

Maple Ridge: The oil from seeds of 9004 possesses a significantly higher percentage of linolenic acid than Maple Ridge (Table 6).

PS42: 9004 matures 10 days earlier than PS42 (Table 7).

Scorpio: The oil from seeds of 9004 possesses a significantly lower percentage of Stearic acid (18:0) than Scorpio (Table 8).

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 2. T-test comparison of 9004 versus KG40 for days to maturity. Days to Maturity is defined as the number of days from planting until 95% of the pods in the plot are physiologically mature. Plots were four 30 inch rows wide and approximately 15 feet long

YEAR	LOC	REP	KG40 (X1)	9004 (X2)	X1-X2	$(X1-X2)^2$
			--- days to maturity ----			
1994	106D	1	115	105	10	100
1994	106D	2	115	108	7	49
1994	106D	3	121	108	13	169
1994	106D	4	128	113	15	225
1994	108B	1	121	109	12	144
1994	108B	2	121	103	18	324
1994	108B	3	122	108	14	196
1994	108B	4	122	105	17	289
		SUM	965	859	106	1496
		MEAN	120.6	107.4	13.3	= **d**

Ave X1 =	120.6
Ave X2 =	107.4
d = (Ave X1 - Ave X2)	13.3
n =	8 groups of individuals

$$\textbf{SE diff} = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$\textbf{SE diff} = \sqrt{\frac{1496 - ((106)^2/8)}{(8)(7)}}$$

Location Key:

106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

SE diff = SQRT of	1.634
SE diff =	1.278
t = d/SE diff =	10.366
df =	7
Prob > **t** =	0.0000169

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 3. T-test comparison of 9004 versus KG41 for days to maturity. Days of Maturity is defined as the number of days from planting until 95% of the pods are physiologically mature. Plots were four 30 inch rows wide and approximately 15 feet long

YEAR	LOC	REP	KG41 (X1)	9004 (X2)	X1-X2	$(X1-X2)^2$
			--- days to maturity ----			
1994	106D	1	122	105	17	289
1994	106D	2	128	108	20	400
1994	106D	3	128	108	20	400
1994	106D	4	134	113	21	441
1994	108B	1	126	109	17	289
1994	108B	2	127	103	24	576
1994	108B	3	127	108	19	361
1994	108B	4	126	105	21	441
		SUM	1018	859	159	3197
		MEAN	127.3	107.4	19.88	= **d**

Location Key:

106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

Ave X1 =	127.3
Ave X2 =	107.4
d = (Ave X1 - Ave X2)	19.9
n =	8 groups of individuals

$$SE\ diff = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$SE\ diff = \sqrt{\frac{3197 - ((159)^2/8)}{(8)(7)}}$$

SE diff = SQRT of	0.658
SE diff =	0.811
t = d/SE diff=	24.493
df =	7
Prob > **t** =	0.00000005

T4. 9004 vs KG60 (MAT)

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 4. T-test comparison of 9004 versus KG60 for days to maturity. Days to Maturity is defined as the number of days from planting until 95% of the pods in the plot are physiologically mature. Plots were four 30 inch rows wide and approximately 15 feet long.

YEAR	LOC	REP	KG60 (X1)	9004 (X2)	X1-X2	$(X1-X2)^2$
			--- days to maturity ---			
1994	106D	1	117	105	12	144
1994	106D	2	128	108	20	400
1994	106D	3	123	108	15	225
1994	106D	4	127	113	14	196
1994	108B	1	122	109	13	169
1994	108B	2	127	103	24	576
1994	108B	3	124	108	16	256
1994	108B	4	123	105	18	324
		SUM	991	859	132	2290
		MEAN	123.9	107.4	16.5	= **d**

Location Key:

106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

Ave X1 =	123.9
Ave X2 =	107.4
d = (Ave X1 - Ave X2)	16.5
n =	8 groups of individuals

$$SE\ diff = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$SE\ diff = \sqrt{\frac{2290 - ((132)^2/8)}{(8)(7)}}$$

SE diff = SQRT of	2.000
SE diff =	1.414
t = d/SE diff =	11.667
df =	7
Prob > **t** =	0.0000077

8

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 5. T-test comparison of 9004 vs. Maple Glen for days to maturity, 1992, 94 2-year analysis. Days to Maturity id defined as the number of days from planting until 95% of the pods in the plot are physiologically mature. Plots were four 30 inch rows wide and approximately 15 feet long.

Formula for Standard Error Calculations:

$$SE\ diff = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

YEAR	LOC	REP	Maple Glen (X1	9004 (X2)	X1-X2	$(X1-X2)^2$
			--- days to maturity ---			
1992	101A	1	117.0	111.0	6.0	36.00
1992	104A	1	127.0	112.0	15.0	225.00
1992	106A	1	129.0	121.0	8.0	64.00
1992		**SUM**	373.0	344.0	29.0	325.00
		MEAN	124.33	114.67	9.67	**=d**
		n =	3	groups of individuals		
1994	106D	1	106.0	105.0	1.0	1.00
1994	106D	2	117.0	108.0	9.0	81.00
1994	106D	3	113.0	108.0	5.0	25.00
1994	106D	4	120.0	113.0	7.0	49.00
1994	108B	1	122.0	109.0	13.0	169.00
1994	108B	2	119.0	103.0	16.0	256.00
1994	108B	3	121.0	108.0	13.0	169.00
1994	108B	4	122.0	105.0	17.0	289.00
1994		**SUM**	940.0	859.0	81.0	1039.00
		MEAN	117.50	107.38	10.13	**= d**
		n =	8	groups of individuals		
TOTAL		**SUM**	1313.0	1203.0	110.0	1364.00
		MEAN	119.36	109.36	10.00	
		n =	11	groups of individuals		

1992 ANALYSIS	
Ave X1 =	124.33
Ave X2 =	114.67
d = (Ave X1 - Ave X2	9.67
SE diff = SQRT of	7.444
SE diff =	2.728
t = d/SE diff =	3.543
df =	2
Prob > **t** =	0.0713

1992 Standard Error Calculation:

$$SE\ diff_{92} = \sqrt{\frac{325 - ((29.0)^2/3)}{(3)(2)}}$$

1994 ANALYSIS	
Ave X1 =	117.50
Ave X2 =	107.38
d = (Ave X1 - Ave X2	10.13
SE diff = SQRT of	3.90848
SE diff =	1.9770
t = d/SE diff =	5.121
df =	7
Prob > **t** =	0.0013665819

1994 Standard Error Calculation:

$$SE\ diff_{94} = \sqrt{\frac{1039 - ((81)^2/8)}{(8)(7)}}$$

COMBINED 1992,94 ANALYSIS	
Ave X1 =	119.36
Ave X2 =	109.36
d = (Ave X1 - Ave X2	10.00
SE diff = SQRT of	2.40000
SE diff =	1.549
t = d/SE diff =	6.455
df =	10
Prob > **t** =	0.0000730

Combined Standard Error Calculation:

$$SE\ diff_{comb} = \sqrt{\frac{1364 - ((110)^2/11)}{(11)(10)}}$$

Location Key:

101A: Amenia, North Dakota
104A: Appleton, Minnesota
106A,D: Redwood Falls, Minnesota
108B: Pipestone, Minnesota

T7. 9004 vs PS42 (MAT)

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 7. T-test comparison of 9004 versus PS42 for days to maturity. Days to Maturity is defined as the number of days from planting until 95% of the pods in the plot are physiologically mature. Plots were four 30 inch rows wide and approximately 15 feet long.

YEAR	LOC	REP	PS42 (X1)	9004 (X2)	X1-X2	$(X1-X2)^2$
			--- days to maturity ----			
1994	106D	1	115	105	10	100
1994	106D	2	117	108	9	81
1994	106D	3	112	108	4	16
1994	106D	4	114	113	1	1
1994	108B	1	122	109	13	169
1994	108B	2	122	103	19	361
1994	108B	3	123	108	15	225
1994	108B	4	118	105	13	169
		SUM	943	859	84	1122
		MEAN	117.9	107.4	10.5	= **d**

Location Key:

106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

Ave X1 =	117.9
Ave X2 =	107.4
d = (Ave X1 - Ave X2) =	10.5
n =	8 groups of individuals

$$\textbf{SE diff} = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$\textbf{SE diff} = \sqrt{\frac{1122 - ((84)^2/8)}{(8)(7)}}$$

SE diff = SQRT of	4.286
SE diff =	2.070
t = d/SE diff =	5.072
df =	7
Prob > **t** =	0.00144

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Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 8. T-test comparison of 9004 vs. Scorpio for percent Stearic acid (18:0). Stearic Acid is determined by HPLC and recorded as a percent of total palmitic, stearic, oleic, linoleic and linolenic acids.

YEAR	LOC	REP	Scorpio (X1)	9004 (X2)	X1-X2	$(X1-X2)^2$
			-- percent stearic acid --			
1994	105A	1	4.3	3.3	1.00	1.00
1994	105A	2	4.3	3.3	1.00	1.00
1994	105A	3	4.3	3.2	1.10	1.21
1994	105A	4	4.5	3.4	1.10	1.21
1994	106D	1	4.3	3.6	0.70	0.49
1994	106D	2	4.1	3.3	0.80	0.64
1994	106D	3	4.0	3.5	0.50	0.25
1994	106D	4	4.5	3.5	1.00	1.00
1994	108B	1	4.5	3.3	1.20	1.44
1994	108B	2	4.1	3.5	0.60	0.36
1994	108B	3	4.6	3.5	1.10	1.21
1994	108B	4	4.4	3.5	0.90	0.81
		SUM	51.9	40.9	11	10.62
		MEAN	4.33	3.408333	0.92	= **d**

Ave X1 =	4.33	
Ave X2 =	3.41	
d = (Ave X1 - Ave X2)	0.92	
n =	12	groups of individuals

$$SE\ diff = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$SE\ diff = \sqrt{\frac{10.62 - ((11)^2/12)}{(12)(11)}}$$

Location Key:

105A: Wood Lake, Minnesota
106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

SE diff = SQRT of	0.004
SE diff =	0.064
t = d/SE diff =	14.376
df =	11
Prob > **t** =	0.00000002

Pioneer Hi-Bred Int'l Inc,
PVP Application 9004 Soybean
May 2, 1995

Table 6. T-test comparison of 9004 vs. Maple Ridge for percent linolenic acid (18:3). Linolenic Acid is determined by HPLC and recorded as a percent of total palmitic, stearic, oleric, linoleic and linolenic acid.

YEAR	LOC	REP	9004 (X1)	M. Ridge (X2)	X1-X2	$(X1-X2)^2$
			-- percent linolenic acid --			
1994	105A	1	11.50	9.60	1.90	3.61
1994	105A	2	10.40	9.00	1.40	1.96
1994	105A	3	11.60	9.50	2.10	4.41
1994	105A	4	11.20	9.60	1.60	2.56
1994	106D	1	9.60	9.60	0.00	0.00
1994	106D	2	10.90	10.10	0.80	0.64
1994	106D	3	9.70	9.00	0.70	0.49
1994	106D	4	11.50	9.00	2.50	6.25
1994	108B	1	11.20	8.80	2.40	5.76
1994	108B	2	11.20	7.80	3.40	11.56
1994	108B	3	11.30	8.90	2.40	5.76
1994	108B	4	11.20	8.90	2.30	5.29
		SUM	131.30	109.80	21.50	48.29
		MEAN	10.94	9.15	1.79	= **d**

Ave X1 =	10.94
Ave X2 =	9.15
d = (Ave X1 - Ave X2	1.79
n =	12 groups of individuals

$$\textbf{SE diff} = \sqrt{\frac{\Sigma (X1-X2)^2 - (\Sigma X1-X2)^2/n}{(n)(n-1)}}$$

$$\textbf{SE diff} = \sqrt{\frac{48.29 - ((21.5)^2/12)}{(12)(11)}}$$

Location Key:

105A: Wood Lake, Minnesota
106D : Redwood Falls, Minnesota
108B: Pipestone, Minnesota

SE diff = SQRT of	0.074
SE diff =	0.272
t = d/SE diff =	6.586
df =	11
Prob > **t** =	0.000039

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
~~LIVESTOCK, MEAT, GRAIN~~ & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Pioneer Hi-Bred International, Inc.		9004

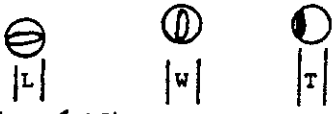
ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
700 Capital Square
400 Locust Street
Des Moines, IA 50309

FOR OFFICIAL USE ONLY
PVPO NUMBER
9600050

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[1]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][4] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[2] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[2] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[4] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

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12. LEAF COLOR:

[2] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[2] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[2] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[2] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[3] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[0][2] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [0] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [1] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [1] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [ ] Other *(Specify)* 9600050

[0] Target Spot *(Corynespora cassiicola)*

[0] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [1] Brown Stem Rot *(Cephalosporium gregatum)*

[0] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

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19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [1] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[1] Purple Seed Stain *(Cercospora kikuchii)*

[1] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [1] Race 1 [1] Race 2 [1] Race 3 [0] Race 4 [1] Race 5 [0] Race 6 [1] Race 7

[1] Race 8 [1] Race 9 [1] Other *(Specify)* _____

VIRAL DISEASES:

[1] Bud Blight (Tobacco Ringspot Virus)

[1] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [1] Cowpea Mosaic (Cowpea Chlorotic Virus)

[1] Pod Mottle (Bean Pod Mottle Virus)

★ [1] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [0] Race 1 [0] Race 2 [1] Race 3 [0] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[ ] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [2] Iron Chlorosis on Calcareous Soil Moderately resistant

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[0] Mexican Bean Beetle *(Epilachna varivestis)*

[0] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	KG40	Seed Coat Luster	9231
Leaf Shape	SCORP10	Seed Size	McCall
Leaf Color	9008	Seed Shape	9008
Leaf Size	SCORP10	Seedling Pigmentation	9007

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

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VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
9004 Submitted	109.3	2.1	60.2	5.6	9.0	42.8	20.2	15.8	3
Maple Ridge Name of Similar Variety	107.9	1.6	49.0	5.0	7.7	42.3	20.7	15.8	3

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PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.

2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.

3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.

4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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9004 PVP Application

EXHIBIT D.

In Exhibit C we have identified 9004 as susceptible to bacterial blight, brown spot, pod and stem blight, rhizoctonia root rot, bud blight, yellow mosaic, cowpea mosaic, pod mottle and seed mottle. This does not mean we consider 9004 to be worse than other varieties of similar maturity in reaction to these challenges. Rather, we have chosen to be conservative and have identified 9004 as "susceptible".

Variety 9004 is a mid group 00 variety. If group 00 maturities are divided into tenths, the relative maturity of 9004 is 004.

REPRODUCE LOCALLY. *Include form number and date on all reproductions.* FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. Name Of Applicant(s)

Pioneer Hi-Bred International, Inc.

2. Temporary Designation Or Experimental Number

3. Variety Name

9004

4. Address *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*

7100 NW 62nd Ave
P.O. Box 1000
Johnston, Iowa 50131-1000

5. Telephone *(include area code)*

515-270-3582

6. Fax *(include area code)*

515-253-2288

7. PVPO Number

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, Please explain. ☐ YES ☑ NO

Agriculture Canada has granted Pioneer Hi-Bred International, Inc. the right to process the forms and obtain PVP for them. Agriculture Canada will be listed as "Owner".

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☑ YES ☐ NO
If no, give name of country

10. Is the applicant the original owner? ☐ YES ☑ NO *If no, please answer the following:*

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?
☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?
☐ YES ☑ NO If no, give name of country Canada

11. Additional explanation on ownership *(If needed, use reverse for extra space):*

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).
To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.